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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte THOMAS H. WRIGHT and JAMES J. ZIARNO

Appeal 2008-4274
Application 09/976,647¹
Technology Center 2600

Decided: January 15, 2009

Before KENNETH W. HAIRSTON, ROBERT E. NAPPI and KARL D.
EASTHOM, *Administrative Patent Judges*.

EASTHOM, *Administrative Patent Judge*.

DECISION ON APPEAL

¹ This application claims priority to great-grandfather application 08/557,269, US 6,047,165, filed November 14, 1995 (App. Br. 1).

STATEMENT OF THE CASE

Appellants appeal under 35 U.S.C. § 134 from the Final Rejection of claims 59-75. (App. Br. 2).² We have jurisdiction under 35 U.S.C. § 6(b).

We affirm.

Appellants describe their invention as an aircraft system that stores large amounts of flight data in a “black box” during flight. Upon landing, the aircraft system wirelessly transmits a selected portion of the stored flight data that exceeds certain performance parameters in a compressed and encrypted format. (Spec. 1:3-13; 19:19-26; 40:25 to 41:13).

Claim 59 is illustrative of the invention and reads as follows:

59. An aircraft data transmission system, the aircraft having a data acquisition unit, and the aircraft including a data storage medium having stored thereon flight data gathered in-flight by at least a first sensor on the aircraft, comprising:
 - a communications unit located in the aircraft and in communication with the data acquisition unit;
 - at least a second sensor configured to sense a landing of the aircraft;
 - a cellular infrastructure in communication with said communications unit after the aircraft has landed, wherein the cellular infrastructure communicates said flight data, and wherein the communication is initiated when at least the second sensor senses the landing of the aircraft;
 - a data reception unit in communication with said cellular information; and
 - wherein said flight data includes time, airspeed, altitude, vertical acceleration, and heading data relating to a flight of the aircraft.

² Appellants’ Appeal Brief (filed November 5, 2007) (“App. Br.”) and Reply Brief (filed March 20, 2008), and the Examiner’s Answer (mailed February 20, 2008) (“Ans.”), detail the parties’ positions.

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The Examiner relies on the following prior art references to show unpatentability:

Miller, Jr.	US 4,729,102	Mar. 1, 1988
Ross	US 5,351,194	Sept. 27, 1994
Polivka	US 5,463,656	Oct. 31, 1995
Miller	US 5,652,717	Jul. 29, 1997 ³
Bannister	US 5,943,399	Aug. 24, 1999 ⁴

The Examiner rejected claims 59 to 75 under 35 U.S.C. §112 1st ¶ as lacking in written description.

The Examiner rejected claims 59, 62-70, and 75 under 35 U.S.C. § 103(a) as being obvious based on Ross and Miller.

The Examiner rejected claims 60 and 71 under 35 U.S.C. § 103(a) as being obvious based on Ross, Miller, and Miller, Jr.

The Examiner rejected claims 61 and 72 under 35 U.S.C. § 103(a) as being obvious based on Ross, Miller, and Bannister.

The Examiner rejected claims 73 and 74 under U.S.C. § 103(a) as being obvious based on Ross, Miller, and Polivka.

ISSUES

This Appeal presents two issues. First, the Examiner found that claims 59-75, amended by Appellants after filing of the original Specification, constitute new matter. Specifically, the Examiner found that claims 59-75 lack original written description for communicating, on

³ Filed Oct. 22, 1996, claims priority to U.S. application 08/285,830, filed August 4, 1994.

⁴ Filed Sept. 25, 1996, claims priority based upon Provisional application No. 60/004,604, filed Sept. 29, 1995.

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landing, the recited flight data, which “includes time, airspeed, altitude, vertical acceleration, and heading data relating to a flight of the aircraft.” (Ans. 3, 9-10). Appellants, acknowledging that their Specification does not explicitly disclose the specific types of flight data recited in the claims, maintain that the Specification inherently supports such data. (App. Br. 16-17).

Appellants also contend, with respect to the obviousness rejection based on Ross and Miller, that the collective teachings at most would motivate one to transmit only data regarding cancellation of a flight plan, and not the flight data recited in the independent claims.⁵ (App. Br. 22).

Therefore, the issues on appeal are:

Did Appellants meet their burden of showing that their Specification inherently supports, as required under 35 U.S.C. 112 1st ¶, initiating flight data communications on landing, “wherein said flight data includes time, airspeed, altitude, vertical acceleration, and heading data relating to a flight of the aircraft” as recited in claim 59?

Did Appellants show that the Examiner erred in finding that Ross and Miller collectively teach initiating communications of flight data on landing, “wherein said flight data includes time, airspeed, altitude, vertical acceleration, and heading data relating to a flight of the aircraft” as recited in claim 59?

⁵ Appellants’ arguments, with respect to the written description rejection, are directed only to the subgroup of independent claims 59, 65, 68, 69, and 75 in the group of claims 59-75, and, with respect to the obviousness rejection based on Ross and Miller, to claims 59, 62-70, and 75, as a group. (App. Br. 12-14, 18-21). Accordingly, claim 59 is selected as representative of each of the groups involved in both statutory rejections. See 37 C.F.R. § 41.37(c)(1)(vii).

ISSUE 1- Written Description

FINDINGS OF FACT (FF)

1. Appellants do not dispute the Examiner's finding (Ans. 3, 9-10) that the original disclosure does not recite "time, airspeed, altitude, vertical acceleration, and heading data relating to a flight of the aircraft."
2. Appellants base their theory of inherent support for the above data items (*see FF 1*) on two Exhibits filed with their first Appeal Brief (filed Sept. 10, 2007), Exhibit 1(*hereinafter* the "FAA" regulations document) and Exhibit 2 (*hereinafter* the "Arinc 717" document). (*See* App. Br. 1 - referencing Exhibits 1 and 2 from Appendix B of the first Appeal Brief; App. Br. 15, 30). Appellants first introduced what is now Exhibit 2, during an office interview (*see* Appellants' Amendment/Remarks 7, filed January 24, 2007). Exhibit 1 first appeared with Appellants' first Appeal Brief (App. Br. 29: Appendix B, titled "Federal Aviation Administration Section 121.344 (1994))."
3. Exhibit 1 lists Federal Aviation Regulations that generally require, for large airplanes or turbine-engine powered airplanes "certificated for operations above 25,000 feet altitude," except as otherwise provided, "one or more approved flight recorders that record data from which the following may be determined . . . (1) Time; (2) Altitude; (3) Airspeed, (4) Vertical acceleration; (5) Heading; and (6) Time of each radio transmission either to or from air traffic control" (App. Br.: Appendix B, Exhibit 1, FAA § 121.343 ¶(a)). FAA Regulation §121.343 ¶¶ (c) and (d) apply to later certificated, equipped, or manufactured airplanes and require the same six elements of data as ¶(a), but add more data requirements, respectively

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totaling 11 and 17, and also generally require a retrieval of the data. (App. Br. Appendix B, Exhibit 1).

4. Exhibit 2 displays a publication date of April 1, 1998, which occurs after the filing date upon which Appellants rely for the instant application (*see* n. 1, *supra*) (App. Br.: Appendix B).

5. Appellants base partial support for claim 59; i.e., initiating communication of the disputed flight data when the second sensor senses the landing of the aircraft, on their Specification at page 41, lines 7-9. (App. Br. 6-7).

6. The passage relied upon in FF 5 describes the data as “provided . . . in a *compressed* and encrypted format, that is automatically downloaded . . . when the aircraft lands.” (Spec. 41: 5-9, emphasis added). Appellants also generally describe downloading “stored, *compressed*, [and] encrypted” flight performance data. (Spec. 3: 25-26, emphasis added). Further, as Appellants point out in their Appeal Brief, “[a] principal function of the GDL unit is to store a *compressed* copy of the (ARINC 717) flight performance data generated by the DFDAU and supplied to the aircraft’s flight data recorder.” (App. Br. 15, quoting Spec. 5:1-4, emphasis added).

7. Appellants state that a “GDL unit on board the aircraft will be automatically commanded what to do, once a ground link has been established.” The passage implies that such an automatic command comes from a systems analyst who “may initially request only a copy of the exceedence list portion of the flight parameter summary report. Should the *report list one or more parameter exceedences*, the system analyst may access the entire flight performance file *relating to such parameter exceedences.*” (Spec. 19: 19-26) (emphasis added).

8. “The compressed data file includes a flight summary report . . .that includes a list of exceedences as defined by the parameter exceedence file.” (Spec. 21: 20-23). An RF transceiver accesses the GDL unit’s compressed data file and transmits an encrypted version of it responsive to an interrogation beacon signal. (Spec. 22: 16-20).

9. Appellants conclude by stating that their disclosed system satisfies the “FAA’s current airline Fight Operations Quality Assurance program, which recommends that airlines routinely analyze aircraft data, . . . by means of a frequency-agile wireless ground data link, . . . and *supplies the same aircraft data provided by the airborne data acquisition unit in a compressed and encrypted format*, that is automatically downloaded . . .” (Spec. 40:25 to 41:7).

10. Appellants invention applies to “commuter, cargo or military aircraft.” (Spec. 3: 15-18).

PRINCIPLES OF LAW

“In the context of the written description requirement, an adequate prima facie case must therefore sufficiently explain to the applicant what, in the examiner’s view, is missing form the written description.” *Hyatt v. Dudas*, 492 F.3d 1365, 1370 (Fed. Cir. 2007). “To overcome a prima facie case, an applicant must show that the invention as claimed is adequately described to one skilled in the art.” *In re Alton*, 76 F.3d 1168, 1175 (Fed. Cir. 1991). “A disclosure in a parent application that merely renders the later-claimed invention obvious is not sufficient to meet the written description requirement; the disclosure must describe the claimed invention with all its limitations.” *Tronzo v. Biomet, Inc.*, 156 F.3d 1154, 1158, 1160 (Fed. Cir. 1998) (citations omitted).

“In order for a disclosure to be inherent, however, the missing descriptive matter must necessarily be present in the parent application’s specification such that one skilled in the art would recognize such a disclosure.” *Tronzo*, 156 F.3d at 1159 (citations omitted). “Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient. (Citations omitted.)” *Pingree v. Hull*, 518 F.2d 624, 628 (CCPA 1965).

ANALYSIS

Appellants copied the disputed flight data phrase “verbatim” from another US patent to provoke an interference. (App. Br. 2). The Examiner found that such data was not originally supported because the Specification fails to mention storage or transmission of any of the five specific elements of flight data recited in claim 59. (Office Action 8-10, mailed April 10, 2007; Ans. 3, 9, 10; FF 1). Thus, under *Hyatt* and *Alton, supra*, the Examiner’s articulation shifted the burden to Appellants to demonstrate that the Specification clearly supports the disputed limitation.

Appellants, relying in part on Exhibits 1 and 2,⁶ not originally filed with their Specification, contend that the disclosure inherently supports the disputed data functions recited in claim 59. (*See* FF 2-3, 5). Accordingly,

⁶ Insufficient evidence exists that Exhibit 2, published after filing, was available. (FF 4). Nonetheless, it has been considered, because the Examiner did not object to the document. *But see Quaker City Gear Works, Inc. v. Skil Corp*, 747 F.2d 1446, 1454-55, n. 10 (CAFC 1984) (quoting the MPEP “essential material” requirement for an adequate disclosure under 35 USC § 112 without deciding its propriety, holding that incorporation by reference of an unavailable document “has never been permissible under 35 USC § 112”).

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Appellants also have the burden to prove such inherent support. *See Hyatt, Tronzo, and Alton, supra.*⁷

In response to the Examiner’s finding of a lack of inherent transmission of the five flight data elements, “Appellants admit that a flight data recorder can store lots of data,” but maintain that the FAA regulations mandate a minimum amount of data that must be stored, including the disputed flight data. (Reply Br. 6). Thus at landing, according to the Appellants, “that minimum accumulated and stored flight performance data will be transmitted in accordance with the claimed invention.” (*Id.*).

Appellants’ argument fails because Appellants disclose transmitting only a compressed version of “lots of data.” (*Id.*, FF 5-9). Thus, even with, *inter alia*, the claimed FAA required data and other data stored in the “black box” (i.e., the disclosed DFDAU) (*see* App. Br. 15; Spec. 2: 3; 4: 3-5), Appellants’ GDL first compresses the DFDAU data before the RF transceiver transmits it as a “list of exceedences.” (FF 7, 8). In other words, Appellants’ system only transmits, upon landing, compressed data – i.e., data that exceeds certain parameters. (FF 5-9).

Hence, a distinct, if not large, possibility exists that each of the five claimed flight data elements would not exceed the required parameters during any one flight. It follows that all five disputed claimed data elements would not be transmitted inherently upon landing, as required to satisfy the written description requirement under Appellants’ theory. Therefore,

⁷ *See also Pingree v. Hull*, 528 F.2d 624, 627 (1975) (describing a two-fold burden in an interference proceeding when an applicant copies claims to provoke the interference proceeding and relies on inherency to support the copied claims) (citations omitted).

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Appellants have not met their burden of showing that the disclosure inherently supports the claims.

Accordingly, the Examiner's written description rejection of independent claims 59, 65, 68, 69 and 75, and dependent claims 60-64, 66-67, and 70-74 incorporating the disputed claim limitation, is sustained.

ISSUE 2 (Obviousness)

FINDINGS OF FACT (FF)

11. Ross discloses "a method for canceling a flight plan and for reporting the location of an aircraft needing assistance either in flight or on the ground." (Ross, col. 3, ll. 28-31). Upon landing, Ross's airplane automatically contacts the ATC (air traffic control) authority via a cellular telephone system to cancel the flight plan or to report the location and initiate search efforts, depending on whether the plane arrived at its intended destination or landed elsewhere with difficulty. (Ross, col. 3, ll. 27-46). The ATC authority continually communicates with the airplane, tracking its location, airspeed, altitude, and direction. (Ross, col. 4, ll. 35-50; col. 6, ll. 13-36).
12. Switches on the aircraft sense normal and crash landings to initiate automatic communications between the aircraft and ATC. Upon a crash landing, the aircraft transmits location data and aircraft identification number data. (Ross, col. 5, ll. 48-56; col. 6, ll. 23-36).
13. Ross's automatic data communications improves upon prior art manual flight cancellation methods and satisfies ATC regulations requiring prompt landing notification. Prior art VHF radio communications limitations sometimes prevented the pilot from timely notifying the airport of safe arrival. (Ross, col. 1, l. 53 to col. 2, l. 11; col. 6, ll. 64-68).

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14. Appellants disclose a prior art system establishing a direct line-of-sight radio communications, proposed to improve airline safety by transferring flight data to a ground unit from a landed aircraft. The proposal responded to FAA recommendations that “airlines look at the information provided by the digital flight data acquisition unit at regular intervals.” (Spec. 2: 7-14).

Appellants mention “obvious drawbacks” to the prior art line-of-sight system, including cost and a requirement “that the aircraft be parked at the gate.” (Spec. 3: 5-18).

15. Miller discloses regulatory standards requiring recordation of “five flight parameters, including indicated air speed, altitude, vertical acceleration, heading and time” (col. 1, ll. 35-38). The digital recording of the “five primary flight parameters,” and more, up to sixteen, became mandatory in the United States and other countries for passenger carrying aircraft certified after September 1969. (Miller, col. 1, l. 61 to col. 2, l. 2).

16. Miller also notes that evolving standards and economical feasibility renders

the collection and analysis of such data . . . extremely beneficial in both short term and long term aircraft maintenance and planning. For example, if the recorded data can be rapidly analyzed and made available to flight line maintenance personnel, the time required to identify and replace a faulty component can be substantially reduced to thereby prevent or minimize disruptions in aircraft departure and arrival schedules.

(Miller, col. 2, ll. 38-47). The data can also be useful in identifying flight procedures to reduce fuel consumption, and otherwise monitor aircraft performance, deterioration, and efficiency. (Miller, col. 2, ll. 26-60).

17. Miller’s system discloses storing and transmitting, during flight, “excessively low or high vertical acceleration, excessive air speed prior to

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landing, descent rates that exceed a preselected value, changes in aircraft heading at rates that exceed desired limits, excessive altitude loss during climb out procedures, and various other conditions that are useful in determining both aircraft performance and the execution of various maneuvers.” (Miller, col. 6, ll. 22-30, 51-55). Miller’s system also stores for access, *inter alia*, the primary five data parameters (col. 14, ll. 54-65).

18. Ground personnel can also retrieve the data through a ground station which can then also transmit it via conventional telephone lines. (Miller, col. 13, ll. 44-62).

19. Miller generally discloses transmitting flight data to a ground station without specifically limiting the transmission during flight or otherwise. (Col. 12, ll. 55-60; col. 15, ll. 27-32).

PRINCIPLES OF LAW

“On appeal to the Board, an applicant can overcome a rejection [under § 103] by showing insufficient evidence of *prima facie* obviousness or by rebutting the *prima facie* case with evidence of secondary indicia of nonobviousness.” *In re Kahn*, 441 F.3d 977, 985-86 (Fed. Cir. 2006) (quoting *In re Rouffet*, 149 F.3d 1350, 1355 (Fed. Cir. 1998)).

“The combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results.” *Leapfrog Enter., Inc. v. Fisher-Price, Inc.*, 485 F.3d 1157, 1161 (Fed. Cir. 2007) (quoting *KSR Int’l Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 1739 (2007)). “One of the ways in which a patent’s subject matter can be proved obvious is by noting that there existed at the time of invention a known problem for which there was an obvious solution encompassed by the patent’s claims.” *KSR*, 127 S.Ct. at 1742.

ANALYSIS

Appellants do not dispute (Reply Br. 7) that Ross discloses automatic data transmission upon landing and during flight. (FF 11-13). Similarly, Miller teaches transmitting, *inter alia*, the “primary” five disputed and claimed data elements, albeit, during flight. (FF 15, 17, 19). Miller teaches that ground personnel can retrieve the data through a ground station which then transmits the data via conventional telephone lines (FF 18). Miller also generally discloses transmitting data without restriction ; i.e., during flight or on the ground. (FF 19).

Miller discloses long and short term advantages of rapidly analyzing all such recorded flight data. (FF 16). Ross also discloses the advantages of automatic and prompt transmission to satisfy regulatory requirements upon landing. (FF 13). Similarly, Appellants disclose a known regulatory need to transmit flight data upon landing, and disclose that prior art systems have “obvious” problems due to cost and line of sight transmission of such data upon landing. (FF 14).

Accordingly, Appellants’ argument that the combination teaches only that “aircraft personnel would manually enter the plane to retrieve any additional flight data via a disk” (App. Br. 22) ignores the principal enunciated in *Leapfrog, supra*, that “[a]pplying modern electronics to older mechanical devices has been common place in recent years.” *Leapfrog*, 485 F.3d at 1161. Hence, applying modern prior art automatic wireless transmission techniques to transfer promptly the required primary five regulatory data as Miller suggests, upon landing as Ross, Miller, and admitted prior art systems suggest, would have been obvious. Such a combination satisfies regulatory requirements and gains short and long term cost, maintenance, and safety advantages, thereby remedying known prior

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art problems, including manual or other line of sight retrieval problems. (FF 11-19). According to *KSR*, and *Leapfrog*, the combination amounts to the predictable combination or substitution of a prior art techniques. Under *Kahn*, Appellants did not demonstrate that the Examiner erred in the obviousness determination.

Accordingly, the Examiner's obviousness rejection of claim 59 and claims 62-70 and 75, not separately argued, based on Ross and Miller, is sustained. Similarly, the Examiner's obviousness rejections of claims 60 and 71, 61 and 72, and 73 and 74, based respectively on the added teachings of Miller, Jr., Bannister, and Polivka, are sustained. Appellants do not present separate patentability arguments for those rejections. *See Kahn* and 37 C.F.R. § 41.37(c)(1)(vii).

CONCLUSION

Appellants did not meet their burden of showing that their Specification inherently supports, as required under 35 U.S.C. 112 1st ¶, initiating flight data communications on landing, "wherein said flight data includes time, airspeed, altitude, vertical acceleration, and heading data relating to a flight of the aircraft" as recited in claim 59. Appellants also did not show that the Examiner erred in finding that Ross and Miller collectively teach initiating communications of said flight data on landing, as recited in claim 59. We sustain all rejections on appeal.

DECISION

We affirm the Examiner's decision rejecting claims 61-75.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv)(2006).

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AFFIRMED

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